L O V A T O S. P .A.
DIVISIONE AUTOMAZIONE
Componenti e sistemi per automazione

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ADX Remote keypad
User's manual

WARNING
The description and the indicated data of this manual are subject to be revised or improved at any moment so do not have any contractual value. The remote keypad should be installed and used by qualified personnel and in compliance with the regulations in force for electrical systems in order to avoid damages and safety hazards.

Preliminary controls

- ❑ Remove the remote keypad from the carton packing and check if there is any external damage to the keypad, eventually caused during transport.
- ❑ Control if the keypad reference given on the identification label corresponds to the transport document as well as the purchase order.
- ❑ Check if the connecting cable for the remote keypad, code 51C8, has been included.

User's manual revision

The remote keypad can be subject to updates of the relative control functions. To obtain those updates, we recommend to always refer the manual complementary to the device.

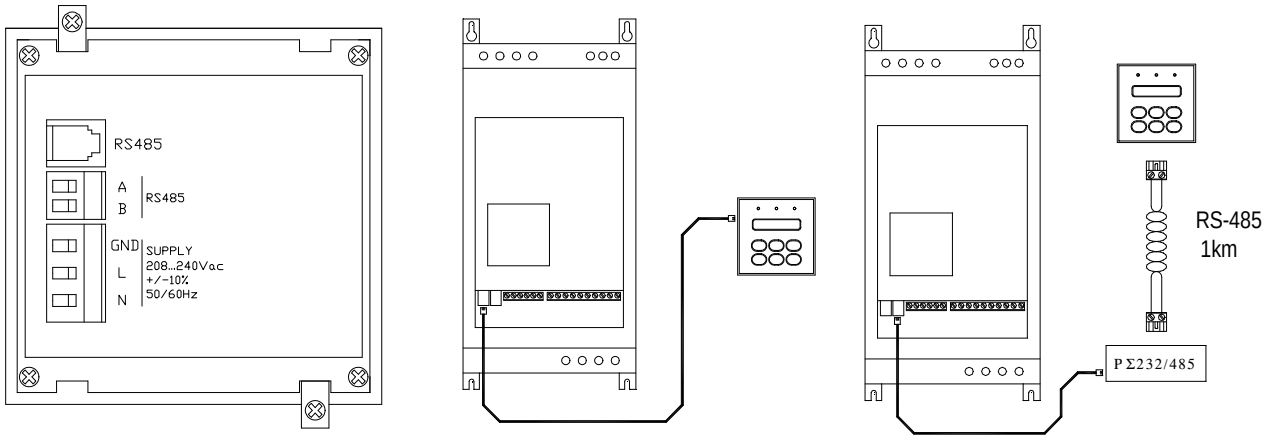
Presentation

The panel-mount remote keypad is operationally identical to the one on board the soft starter except for the start and stop controls of the motor which are permanently disabled. To set it working, the keypad must be connected to the RS-485 port of the ADX starter by means of the standard supplied cable (code 51C8, 3 meters long) and apply the power supply. For longer distances, the keypad can be connected to the RS-232 port of the ADX starter by means of the RS-232/RS-485 converter drive (galvanically isolated). The converter drive can eventually be supplied by LOVATO.

N.B. The communications baud rate of the ADX starters is 19200 for the RS-485 or 9600 for the RS-232 port.

Installation

The remote keypad does not require particular installation instructions. Nevertheless, particular care must be given to the communications cable going to the starter. Placing the cable close to power lines or equipment such as frequency drives, UPS, switching feeders, must be avoided. Whenever the RS-232/RS-485 converter drive is used, the keypad is equipped with two terminals RS-485 for the duplex cable connection.



RS-485 3m RS-232

Front keypad description

- ❑ **POWER** LED – Power on indicator of the auxiliary supply.
- ❑ **RUN** LED – Motor running indicator; during acceleration or deceleration stage, the LED is flashing.
- ❑ **FAULT** LED – Alarm and relative output relay enabled indicator.
- ❑ **ENTER / START** button – To confirm operations at stored data.
- ❑ **RESET / STOP** button – to enter and exit set-up menus, cancel operations from stored data.
- ❑ **PREVIOUS** and **NEXT** buttons – To access readings, select menus and set-up parameters.
- ❑ ▼ and ▲ buttons – To modify set-up parameters and have access to additional details concerning each display screen.
- ❑ **LCD screen** – To view readouts, operating status, alarm events, parameters and data.

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Keypad functions

The functions of the keypad are:

- **K00 – Contrast** (Keypad contrast adjustment **(1)**)
- **K01 – Backlight** (Backlight adjustment)
- **K02 – Baud rate** (Communications speed **(2)**)
- **K03 - Receive data** (ADX⇒Keypad data transfer)
- **K04 - Transmit data** (Keypad⇒ADX data transfer)

To have access to the functions, proceed as follows:

- ❑ Press the **RESET/STOP** button to return to the main screen.
- ❑ Push buttons ▼ and ▲ together for 5 seconds.
- ❑ Press the **ENTER/START** button to enter the functions menu.
- ❑ Press either the **PREVIOUS** or **NEXT** button to select the functions.
- ❑ Operate either the ▼ or ▲ button to adjust the contrast, backlight and transmission baud rate. Then press the **ENTER/START** button to confirm the chosen adjustment **(3)**.
- ❑ Push the **ENTER/START** button to enable data reception and data transmission and confirm the relative baud rate.
- ❑ Press the **ENTER/START** button to begin data reception and data transmission.
- ❑ Operate the **RESET/STOP** button to cancel the reception or transmission command.
- ❑ Use the **RESET/STOP** button to exit the functions menu.

(1) To adjust the ADX starter contrast, disconnect the transmission cable temporarily and operate the on-board keypad.
(2) The ADX communications baud rate is 19200 for RS-485 or 9600 for the RS-232 port.
(3) When a parameter is chosen and confirmed, the wording flashes together with the **RUN** LED.

ADX starter set-up

The set-up can be made only when the motor is stopped. To have access to the parameter set-up menus, proceed in the following way:

- ❑ Press the **RESET/STOP** button for at least 3 seconds to have access to the set-up menus.
- ❑ Push either the **PREVIOUS** or **NEXT** button to select the **Basic-Advanced-Functions-Commands-Clock** menus.
- ❑ Operate the **ENTER/START** button to enter the parameter.
- ❑ Press either the **PREVIOUS** or **NEXT** button to select the parameter.
- ❑ Push either the ▼ or ▲ button to adjust the parameter.
- ❑ Use the **RESET/STOP** button to exit the parameter set-up menu and return to menu choice.
- ❑ Press the **RESET/STOP** button again to exit the set-up and return to the main screen.

N.B. When a certain operation of the COMMANDS menu must be confirmed, use the **ENTER/START** button; contrarily to cancel one, use the **RESET/STOP** button**.**

Readouts and data display

The following are necessary to display useful information during the setting at work and during motor or starter malfunction:

- ❑ Press the **RESET/STOP** button is view the main screen.
- ❑ Push the **NEXT** button to have access to the subsequent screens or the **PREVIOUS** button to the previous ones.

N.B. The ▼ and ▲ buttons often consent to view extra details related to the viewed screen(s).

Error messages

The remote keypad gives messages which help identify the problem during communications with the starter.

Code	Error	Description
E00	**Timeout**	Communications cable has not been connected at all
E01	**Transmission failed**	Communications cable originally connected but then disconnected
E02	**Transmission error**	Data communications error **(1)**
E03	**Failure**	Probable damage to the communications circuits
(1)	Communications errors control is only enabled with data transfer functions.	

Technical characteristics

Electrical features	
Supply voltage	208...240VAC ± 10%
Power consumption	6.9VA (at 240VAC)
Power dissipation	3.2W (at 240VAC)
Supply frequency	50 or 60Hz
Power loss ride through	≤6ms (at 208VAC)

Connections	
RS-485	Connector type RJ 4/4 or removable 2-pole 2.5mm² terminals
Supply	Removable 3-pole 2.5mm² terminal block

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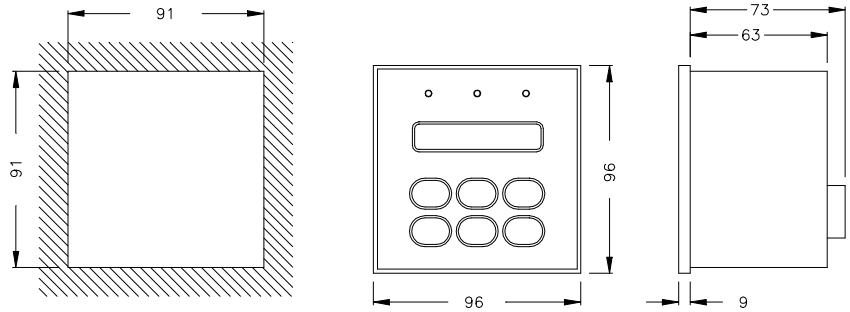
Housing	
Version	Flush mount according to DIN43700 standards c/w bracket fixing
Material	Self-extinguishing black Noryl UL94 V-0
Dimensions	96 x 96 x 75 mm
Cut-out dimensions	91 x 91 mm
Degree of protection	IP41 (IP54 with protective transparent cover)
Weight	350g

Front plate	
Display	Backlit LCD 2 line 16 digits
LED	3 (POWER, RUN and FAULT)
Buttons	6 ("ENTER/START", "RESET/STOP", "⇐PREVIOUS", "NEXT⇒", "▼" and "▲")

Operating ambient conditions	
Operating temperature	-10…+60°C
Storage temperature	-20…+70°C

Cut-out and overall dimensions



Reference standards

Tests related to operating characteristics (IEC 60255-6)

Dielectric test (IEC 60255-6)

- Industrial frequency: 2000V for 1 minute
- Impulse: 4800V (5 positive and 5 negative at intervals longer than 1 second)

Electromagnetic compatibility testing

- Conducted emission immunity (EN 55011: class A limits)
- Radiated emissions (EN 55011: class A limits)
- Electrostatic discharge immunity (EN 61000-4-2: 4 kV by contact, 8 kV in air)
- Radiated radio-frequency electromagnetic field immunity (EN 61000-4-3: 10 V/m)
- Conducted radio disturbance electromagnetic field immunity (EN 61000-4-6: 10 V)
- Fast transient / Burst immunity (EN 61000-4-4: 2 kV)
- Surge immunity (EN 61000-4-5: 2 kV common mode, 1 kV differential mode)
- Short voltage interruptions immunity (EN 61000-4-11)

Climatic resistance – Continuous test Z/ABDM (IEC 68-2-61)

- 1 method: hot dry, hot damp, cold, hot damp

Damp-saline ambient test (RINA specifications)

- Test parameters defined by E section of RINA standards (Italian Naval Register)

Vibration resistance (test method according to IEC 60068-2-6)

- Fc test (sinusoidal vibrations), test parameters defined by Lloyd's Register of Shipping regulations (equivalent to Section E, table 3.1 of RINA standards

Shock resistance (test method according to IEC 60068-2-27)

- 5 g / 10 ms with device supplied
- 15 g / 10 ms with device not supplied.